

**CLAIMS:**

1. A riding lawnmower comprising:  
a frame;  
an engine supported by the frame;  
5 a mower deck supported by the frame;  
a rotating cutting blade disposed below the mower deck;  
a PTO coupling the engine and the rotating cutting blade to rotationally drive  
the cutting blade;  
a drive system connected to the frame and coupled to the engine for driving the  
10 lawnmower;  
a tilt sensor for sensing a tilt angle representing the orientation of the  
lawnmower with respect to a horizontal level plane, the PTO being disengaging from the  
engine to stop rotation of the cutting blade when the tilt angle exceeds a pre-determined limit  
angle, the drive system remaining operable to drive the lawnmower when the PTO is  
15 disengaged to stop rotation of the cutting blade.
2. The lawnmower of Claim 1, wherein the drive system includes two  
independently controlled drive wheels.
- 20 3. The lawnmower of Claim 1, wherein the tilt sensor includes a tip switch for  
providing the limit signal when the tilt angle exceeds the limit angle.
4. The lawnmower of Claim 1, wherein the tilt sensor includes an inclinometer  
for measuring the tilt angle and providing a numerical value for the tilt angle.

5. The lawnmower of Claim 1, further comprising  
a CPU coupled to the tilt sensor, the tilt sensor providing a check signal to the CPU when the tilt angle exceeds a pre-determined check angle, the tilt sensor providing a limit signal to the CPU when the tilt angle exceeds the limit angle, the limit angle being  
5 greater than the check angle; and  
a signal indicator providing a notice signal being at least one of an audible signal and a visual signal in response to the CPU receiving the check signal.
6. The lawnmower of Claim 5, wherein the signal indicator provides the notice  
10 signal when the CPU continuously receives the check signal for at least a pre-determined period of time.
7. The lawnmower of Claim 6, wherein the pre-determined period of time is  
about 1 second.
8. The lawnmower of Claim 5, wherein the signal indicator provides an additional  
15 notice signal when the CPU receives the limit signal, the PTO being disengaging from the engine to stop rotation of the cutting blade when the CPU continuously receives the limit signal for at least a second pre-determined period of time.
9. The lawnmower of Claim 8, wherein the second pre-determined period of time  
20 is about 5 seconds.
10. The lawnmower of Claim 5, wherein the CPU includes a memory for recording  
25 the disengagement of the PTO.
11. The lawnmower of Claim 5, wherein the tilt sensor includes a check switch for  
providing the check signal when the tilt angle exceeds the check angle and a limit switch  
providing the limit signal when the tilt angle exceeds the limit angle.

12. The lawnmower of Claim 5, wherein the signal indicator includes a speaker for providing the notice signal.

13. The lawnmower of Claim 5, wherein the signal indicator includes a strobe light  
5 for providing the notice signal.

14. The lawnmower of Claim 5, wherein the check angle is about 10 degrees.

15. The lawnmower of Claim 5, wherein the limit angle is about 20 degrees.

16. A riding lawnmower comprising:
- a frame;
  - an engine supported by the frame;
  - a mower deck supported by the frame;
  - 5 a rotating cutting blade disposed below the mower deck;
  - a PTO coupling the engine and the rotating cutting blade to rotationally drive the cutting blade;
  - a drive system having two independently controlled drive wheels connected to the frame and coupled to the engine for driving the lawnmower;
  - 10 a signal system comprising:
    - a tilt sensor for sensing a tilt angle representing the orientation of the lawnmower with respect to a horizontal level plane, the tilt sensor providing a check signal when the tilt angle exceeds a pre-determined check angle and providing a limit signal when the tilt angle exceeds a pre-determined limit angle, the limit angle being
    - 15 greater than the check angle;
    - a processing module coupled to the tilt sensor and being operable to receive the check and limit signals from the tilt sensor; and
    - a signaling module coupled to the processing module for providing notice signal being at least one of an audible signal and a visual signal when the
    - 20 processing module continuously receives the check signal for at least a pre-determined period of time, the PTO being disengaging from the engine to stop rotation of the cutting blade when the processing module receives the limit signal, the drive system remaining operable to drive the lawnmower when the PTO is disengaged in response to the limit signal.
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17. The lawnmower of Claim 16, wherein the pre-determined period of time is about 1 second.
18. The lawnmower of Claim 16, further comprising a storage device coupled to
- 30 the processing module and being operable to record when the PTO is disengaged from the engine.

19. The lawnmower of Claim 16, wherein the signaling module provides an additional notice signal when the processing module receives the limit signal, the PTO being disengaging from the engine to stop rotation of the cutting blade when the processing module  
5 continuously receives the limit signal for at least a second pre-determined period of time.

20. The lawnmower of Claim 19, wherein the second pre-determined period of time is about 5 seconds.

10 21. The lawnmower of Claim 16, wherein the tilt sensor includes a check switch providing the check signal when the tilt angle exceeds the check angle and a second tip switch providing the limit signal when the tilt angle exceeds the limit angle.

22. The lawnmower of Claim 16, wherein the tilt sensor includes an inclinometer  
15 for measuring the tilt angle and providing a numerical value for the tilt angle.

23. The lawnmower of Claim 16, wherein the signaling module includes a speaker for providing the notice signal.

20 24. The lawnmower of Claim 16, wherein the signaling module includes a strobe light for providing the notice signal.

25 25. The lawnmower of Claim 16, wherein the check angle is about 10 degrees and the limit angle is about 20 degrees.

26. A method of providing a signal for the operating angle of a lawnmower having a frame, an engine supported by the frame, a mower deck supported by the frame, a rotating cutting blade disposed below the mower deck and a PTO connecting the cutting blade and the engine and rotationally driving the cutting blade, and a drive system having two independently controlled drive wheels connected to the frame and rotationally driven by the engine for driving the lawnmower, the method comprising the acts of:

measuring a tilt angle with a tilt sensor representing the orientation of the lawnmower with respect to a horizontal level plane;

10 sending a check signal from the tilt sensor to a CPU when the tilt angle exceeds a pre-determined check angle;

sending a limit signal from the tilt sensor to a CPU when the tilt angle exceeds a pre-determined limit angle, the limit angle being greater than the check angle;

activating a notice signal being at least one of an audible signal and a visual signal when the CPU receives the check signal; and

15 disengaging the PTO from the engine to stop rotation of the cutting blade when the CPU receives the limit signal, the drive system remaining operable to drive the lawnmower when the PTO is disengaged in response to the limit signal.

27. The method of Claim 26, further comprising the act of logging the disengagement of the PTO in a storage device.

28. The method of Claim 26, wherein the act of activating the notice signal further comprises activating the notice signal when the CPU continuously receives the check signal for at least a pre-determined period of time.

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29. The lawnmower of Claim 28, wherein the pre-determined period of time is about 1 second.

30. The method of Claim 26, further comprising the act of activating an additional notice signal when the CPU receives the limit signal, the act of disengaging the PTO from the engine further comprising disengaging the PTO when the CPU continuously receives the limit signal for at least a second pre-determined period of time.

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31. The lawnmower of Claim 30, wherein the second pre-determined period of time is about 5 seconds.

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